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ABSTRACT

Metaphors influence, in many ways, methods and ways of thinking, including the planning and implementation of inservice teacher education programs. Inservice programs are often not considered successful; writers, developers, producers, and potential adopters of the programs should become aware of their metaphoric stance. Three metaphors commonly found in society are the technological, political, and cultural metaphors, which can be applied to three dominant models (research development and diffusion, problem solving, and social interaction) that are part of the implementation stage of educational innovation. The technological metaphor views the world through the dynamics of industrial change. The political metaphor contends that conflict, competition, compromise, and negotiations are the basis for change. The relationships of the individual to society and other people form the basis of the cultural metaphor. Each of the three inservice models illuminate one perspective of the innovation process. The research development and diffusion model assumes that solving problems is primarily a matter of attention, applications, and money. The problem solving model is built around the user of the inservice program with the assumption that the program will satisfy identified needs. The social interaction model stresses the importance of interpersonal networks of information, opinion leadership, personal contact, and social integration. Knowing the advantages and problems of each of these models, as they reflect the metaphorical concepts that form their philosophic base, will help to improve the planning and implementation of inservice teacher education programs. (JD)

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METAPHORS OF CHANGE AND MODELS OF INSERVICE

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Metaphors of Change and Models of Inservice

Introduction

The purpose of this article is to discuss the relationship between the metaphors of inservice educational programs and dominant models of educational change within Western society. Three major metaphors will be presented and will be shown to have a close connection to three distinct ideas about what is of value in any educational change. The intent of the article is to, through a critical analysis of different possibilities of inservice programs, allow educators who build, use, or consider using or building inservice programs become more aware of implications of one particular choice over another.

Metaphor

Two teachers are talking. One says "The place was a zoo today, I needed to be three people to get any work done." The second replies "I know what you mean. My kids are squirrelly, too."

The above is not an uncommon type of conversation between teachers. In fact, we have heard this same conversation almost word for word in a junior high school. What do these teachers mean? Do they mean, for example, that today in their school outsiders had to pay admission and travelled from exotic animal house to exotic animal house so that they might view animals foreign to that enviornment. Or, did the second teacher mean that his students were scampering from tree to tree gathering acorns for the winter. No. These teachers were speaking metaphorically, using the metaphor of the zoo and the squirrel to better explain one aspect of the behavior of their students on this one, particular day.

The use and function of the metaphor within our language cannot be ignored. Stephen Brown (1966:191) states that "metaphor is of the very warp and woof

of language, part of its permanent texture." "Metaphor" is generally used in two fundamentally different ways. In the first and by far the most common sense "metaphor refers to a part of language, so that a certain set of words may be said to be a metaphor" (Schon 1967). The zoo metaphor is such an example. In the second sense, and by far the most important to the purposes of this paper, metaphor is a process of thought. Scheffler (1964) asserts that metaphors organize reflection and explanation in scientific and philosophical contexts. Metaphors often serve as ways of channelling action. Schon (1979) emphasizes the extent to which metaphors can constrain and sometimes control the way we conceive the world. He suggests that metaphors generate their own solutions but often fail to present an objective characterization of the problem. Ortony (1979) suggests that metaphors are important because they are able to provide alternative or new ways of "seeing". Altiek (1960) alleges that a writer's metaphors may also tell the reader other things about him and his attitudes, as well as the attitudes he wishes the reader to see.

Language without metaphor is difficult. Turbayne in The Myth of Metaphor (1970) declares that there are two aspects of metaphor as a process of thought. These aspects are the awareness of the presence of metaphor and the avoidance of being "victimized" by metaphor or being used by metaphor. To become aware of the presence of metaphor or to use a metaphor involves an awareness of the presence of metaphor and the avoidance of being "victimized" by metaphor or being used by metaphor. To become aware of the presence of metaphor or to use a metaphor involves an awareness that there is "sort crossing." That is, there is a re-presenting of the facts of one sort in idioms appropriate to another. Also, there is a pretense that two different things or sorts referred to in each pair share a similar name and similar qualities (sort-crossing). The fable, the parable, the allegory, the analogy, the myth, and the model are

extended or sustained metaphors. None of these are what they appear: they are all cases of representing the facts that belong to one sort as if they belonged to another. Burke, according to Turbayne (1970), states that a metaphor offers "perspective". Metaphor is a device for seeing something in terms of something else. A metaphor tells us something about one character considered from the point of view of another character. To consider A from the point of view of B is to use B as a microscope with which to view A more closely and differently. "The metaphor is a stereoscope of ideas (Turbayne 1970:21)."

An effective metaphor acts like a screen through which we look at the world. It filters the facts, suppressing some and emphasizing others. It "brings forward aspects that might not be seen at all through another medium (Turbayne 1970:21)." These aspects are potentially powerful because they can cause a shift of attitudes towards the object being viewed. A powerful metaphor, in other words, produces "shifts of attitudes."

A change in attitudes can even cause a change in fact. When the attitudes are changed and this change becomes acceptable to many, the old descriptions are neglected, and the facts are changed. The tomato re-allocated to the vegetable class changes its taste. The human characteristics that Aesop pretended were owned by animals have become literally part of these animals' characteristics: foxes have become cunning and lambs have become gentle. And, should teachers continue to see the place where they work as a zoo, students will come to be seen, more and more, as suitable for training as opposed to teaching.

The problem with powerful metaphors is that, when pretense is dropped, what was before called a <u>screen</u> or <u>filter</u> is now more appropriately called a <u>disguise</u> or <u>mask</u>. There is a difference between using a metaphor and being used by it, between using a model and mistaking the model for the thing

described. One is to make believe that something is the case, the other is to believe that something is the case.

According to Turbayne (1970), being used by a metaphor or taking a metaphor literally is a case of sort-trepassing. An example of metaphors entering a stage of a near literalness is the metaphor of "teacher burnout." Teachers are assumed to be like fires. Fires burn and die. If teachers are like fires, then they too can burn vigorously and then become lifeless. It is a case of different sorts of fires. If A is aware of the metaphor while B is not, B is taking the metaphor literally and the metaphor disappears. The mask has become the face. Similarly in the case of models, the model can become the thing. The victim of a powerful metaphor eventually does not know that there are other ways of viewing the world. His view becomes the only reality rather one of a number of options.

Schön (1963, 1979) extends metaphors into the area of social problems. Schon states that metaphors are central to how we think about the world, situations, and things; how we make sense of reality; how we define problems we later try to solve; how we interpret others; and, whether our thinking involves a generative metaphor. A generative metaphor, says Schön (1979;254), is the "carrying over of frames or perspectives from one domain of experience to another." He sees the problem-solving process as essentially "coming to see things in new ways".

Schön (1979) asserts that difficulties in social policy and social problems have more to do with problem setting than with problem solving. Difficulties have more to do with how the questions are posed and what purposes are to be achieved than with the selection of optimal means for achieving them. Often the analyzing of a problem, the description of the problem, and the story that interprets the problem depend on the metaphor used in discussing that problem.

Therefore, the direction of problem-solving is already set.

A student comes into class crying. If the teacher asks the child who made him cry, the direction of the answer is apparent. However, another answer is expected if the question changes to:

1. What did the older students do to you?
2. Do you want to go home?
3. How badly are you hurt?

In short, we can expose our metaphor, elaborate the assumptions which flow from it, and examine their appropriatness to present situations. The notion of generative metaphor becomes an interpretive tool for the critical analysis of social policy. Since we already think about social policy in terms of certain pervasive and tacit generative metaphors, we can become more critically aware of them.

The object of the problem-solving perspective is to search for solutions. Problems themselves are generally assumed to be given; but, we cannot yet solve them. The task becomes to find solutions to known problems. But Schön (1979) claims that the problems are not given. They are, in reality, constructed by human beings in their attempt to make sense of complex and troubling situations. Ways of describing problems change from one century to another, one era to another, one town to another, or one society to another. New descriptions of problems tend not to spring from the solutions to the earlier problem, but evolve independently as new features of situations that come into prominence. In the 1970's, health problems were often described from a diet perspective, while in the 1980's the same health problems are being described from an air pollution perspective. The urban problem tended to be defined in the 1950's as "congestion", in the 1960's as "poverty", and in the 1970's as "fiscal insolvency."

Each view of the problem conveys a different view of reality and represents a special way of "seeing". Each view selects a few salient features and relations from what would otherwise be an overwhelming complex reality. The metaphoric view offers a coherent organization and describes what is wrong with the present situation in such a way as to set the direction for future transformation. Through this process, there is a leap from fact to values, from "is" to "ought".

The sense of the obviousness of what is wrong and what needs fixing is the hallmark of generative metaphor in the field of social policy. A girl says to a boy "I know your type", and she has him pegged. Her perception of him may change, but not her category. Or a man meets another person walking a street. She looks to him like someone he went to school with and he begins to call her by name; but, she turns out to be someone else. Humans look for old things to define or to recognize the new. But what seems obviously correct in a new situation may, upon reflection, seem utterly wrong. Insofar as a generative metaphor leads to a sense of the obvious, its consequences may be negative as well as positive. When we see A as B, we may not necessarily understand A any better than before, although we understand it <u>differently</u> than before. How well we understand A has something to do with how well we understood B to begin with, and also something to do with the ways in which seeing A and B leads us to restructure our perceptions of A. At any stage of the life cycle of generative metaphor, we may be seeing A as B and distorting or ignoring what would be upon reflection, important features of A.

<u>Dominant Educational Metaphors</u>

There are numerous metaphors in education, i.e. military, growth, sculpture, economics, prisons, sports, and industry. Upon examination, we have chosen

three which are dominant in education and, in particular, form the basis for inservice programs. These are the technological, political and cultural metaphors. Each will be examined in detail.

Technological Metaphor

Schön (1967) presents the dynamics of industrial change as a metaphor for change in our society as a whole. His view of innovation is that

"1. It can be managed.
2. It must be analyzed into its component parts and be made subject to rational steps.
3. It follows a series of orderly steps, each of which seems to relate special efforts to corporate objectives, and each lends itself to effective management practice along familiar corporate lines (Schön 1967:19)."

To reduce the risks of innovation, Schön (1967) states, people do things only when they have been shown they are worth doing. This rational view of innovation assumes that invention follows as a series of orderly steps intelligently directed toward an objective spelled out in advance. There is a rigid division of labor between those concerned with the need (marketing) and those concerned with the technique (technology).

Western society accepts this rational view of innovation because it views functions as an idealized, after-the-fact view of innovation that can be controlled, managed, and justified. Such a view tends to calm fears, gain support, or give an illusion of wisdon. It is more encouraging to believe that innovation is essentially a deliberate and rational process in which success is assured by intelligent effort.

There may, in truth, be utility in acting as if this were true. The formulation of objectives for technical effort provides a stimulus for action and a direction for the effort. Planning the process of innovation, which assumes the goal-directed order structure of the rational view, has utility as a programming device.

Bennis, Benne, and Chin (1969) state that strategies of innovation should be consistent with the metaphor that they represent. The empirical rational approach implies that men are rational and, once they understand an innovation, will accept it. Innovations are adopted if they can be rationally justified and shown that the adopter will benefit by the change. The assumption is that reason determines the process of initiating innovations; thus, scientific investigation is the best way of extending a certain kind of knowledge from a basic research to practical application.

Lauer (1973) sees technology as the driving force behind change. Man seems to be forever gasping to keep up and adapt to the world that technology is creating. North Americans "view technology as the Savior (Lauer 1973:102)." This metaphor stems from such ideas as the Baconian notion that knowledge is power. The development and application of new technology is seen as able to resolve all the varied problems of mankind. August Comte (1798-1857) gave impetus to this viewpoint by equating social progress with the development of scientists and militarists, sharing the conviction that the development and application of technology cay resolve the problems of mankind.

Others see the extreme opposite: technology is the source of man's ills. This conception derives in part from thinkers like Rousseau and Thoreau and their ideas of naturalism and in part from the various socialists' criticisms of the capitalistic misuse of technology. Jaques Ellul, according to Lauer (1973), sees modern man losing control over his destiny to a rampant technology. Man is seen as having become enslaved to that which he thought was his servant. Man has created and is devoured by his own creation. And, in the process, his patterns of thought and behavior have become phenomena shaped by technology.

Theodore Roszak, Lauer (1973) suggests, paints a grim picture of technology's role in the modern world. Leaders justify their behavior by using technical

experts who have, in turn, justified themselves by appealing to scientific thought. In their view, beyond the authority of science there is no persuasiveness.

The role of technology in change has become enormous because it has:

1. increased our alternatives.
2. altered interaction patterns.
3. created new social problems.

Hyman (1973:30), states that the

> "technological metaphor is a deadly one. Its pervasiveness reflects our society's emphasis on getting and spending, on producing and consuming. It is deadly because it subverts humane interaction. Behavior leads the teacher to treat the student as inanimate objects, as things to be processed, stamped out, and finished on the conveyor-belt assembly line instead of as evolving people. It leads the teacher to think that he can and should decide what his product (the student) will become without consulting with the student."

Johnson (1976) illustrates how technology is a generative metaphor of education. By about 1930, school administrators were perceiving themselves as business managers. Practices which enabled industrial managers to increase wages and lower costs were assumed to be applicable to education. School problems were defined in business, technical, and financial terms. There was an emphasis on <u>how</u> to do things rather than on why. The function and the nature of education were scarcely mentioned. Getting the work done as efficiently as possible and the satisfaction of the worker were seen as naturally compatible goals. The importance of the work, itself, was not mentioned.

House (1979) describes the technological metaphor as having replaced the tacit basis of curriculum with a more systematic and rationalized approach. This innovation process is separated into functions and components based on rational analysis and empirical research. House (1979) suggests that the Clark-Guba Research, Development, and Diffusion model of educational innovation

still dominates government thinking about change. The technological metaphor focuses on the innovation because it assumes that everyone is pursuing a common end and the means are not a problem. The technological metaphor reflects a society believing in progress. The only problem is to find how best to achieve this progress.

Political Metaphor

The Political metaphor states that man makes history through competition and conflict. Among North Americans, conflict is a central concern. Dahrendor, writes Lauer (1973), argues that social conflict has a structural origin, namely, the power relations that prevail in all social organizations. In other words, group conflict is to be understood as a conflict about the legitimacy of relations of authority. "Change is ubiquitous (Lauer 1973:249)."

Even assuming that most changes may be effected democratically, there may be an unwillingness to expend the time and energy necessary for democratic procedures. From the point of view of efficiency or profit, the elitist approach of effecting change with or without the willingness of others involved in the change is superior. The basis of the political metaphor is power tactics, whose desired outcome facilitates new relationships.

Lauer states that conflict leads to change. Other writers who make the same link are the Wilsons, in their study of Central Africa The Analysis of Social Change; Martindale, in his description of societal creativity in Social Life and Cultural Change; and Durant, in his study identifying conflict as a change factor in Florence in The Renaissance. Lauer (1973:44) writes that "conflict is a driving mechanism for change ... power is the name of the game". Any effort to direct power, therefore, requires the mobilization and manipulation of power over others. The power strategy emphasizes the ability to coerce and involves the control of information and creation of ambiguity.

Bennis, Benne, and Chin (1971) consider the political metaphor a process of influence involving an application of power in some form, political or otherwise. Those with less power comply to the plan, direction, and leadership of those with greater power. Often the power or authority of law or administrative policy is behind the change to be effected. Some power strategies may appeal less to the use of authoritative power than to coercive power, legitimate or not, in support of the change sought. The political metaphor assumes that man acts on the basis of power relationships - legitimate or coercive.

Bennis, Benne, and Chin state that power and coercion are ingredients of all human action. The difference lies in the kind of power used to implement change and the way in which power is generated then applied in the process of effecting change. The application of this metaphor depends on knowledge as a major source of power, especially based in the form of knowledge-based technology. In this view people of knowledge are legitimate sources of power and the desirable flow of influence or power is through processes of education from people who know to people who don't know. There is a recognition of the importance of the non-cognitive determinants of behavior as resistances or supports to changing values, attitudes, and feelings at the personal level and norms and relationships at the social level.

House (1979) utilizes the concept of personal face-to-face interaction as a key idea in his concept of political metaphor. Personal contact is essential in innovation because it provides the opportunity for two-way questioning, persuasion, and the kind of intense interaction that must accompany change. The political metaphor places high value on competing factional groups, mutual adaption, and curriculum negotiation.

Johnson (1976) writes that education, in the late 1950's and 1960's, borrowed the economic portion of the political metaphor. The result is known as the economics of education. Studies in this new area attempted to demonstrate the validity of a theory of economics which held that education increases personal income and promotes economic growth. Increased expenditures on education and increased years of schooling were justified on the basis of education's reputed contribution to the economic productivity of the country.

Since measuring output is necessary to determine productivity and the effects of efforts to increase it, only factors of output which are measurable can be taken seriously. When this philosophy is carried over into education, it means that components or goals, which are unmeasurable or difficult to measure, like creativity, critical thinking, or awareness are eliminated in favor of easily measured goals such as word recognition, writing, and mathematical computations.

Since economists are not concerned with studying the actual production process, then educators are not encouraged to study the actual teaching-learning process but are encouraged to study the inputs and outputs from the school system. Economists use the concepts of "progress", "efficiency" and "growth" in a special way. These concepts are not to threaten social stability, that is, the current status quo of business and government. Disarmament, for example, wouldn't be considered "progress" or "efficiency" by economists if it threatened to disrupt the stability of corporations, no matter how much it contributed to the quality of life (Johnson 1976).

Population studies made by economists of education measure group achievement, not individual achievement, so that this output can be measured against expenditures for education in order to determine at what rate productivity in education is increasing or decreasing; to determine which population groups

are being educated with the greatest cost-effectiveness; and to compare expenditures for education with the output produced by expenditures in social areas competitive with education such as health care, job training, or welfare.

In the political metaphor, there is an emphasis upon political and economic sanctions in the exercise of power. Another strategy is the utilization of moral power, playing upon sentiments of guilt and shame. Political power caries with it legitimacy and sanctions those who break the law. Getting a law passed against racial discrimination in the school brings legitimate coercive power behind efforts to desegregate the school, threatening those who resist with penalties under the law and thus reducing the resistance of those who are morally oriented against breaking the law. Economic power exerts coercive influence over the decisions of those to whom it is applied. Federal appropriations granting funds to local schools for increased emphasis upon French instruction tend to exercise coercive influence over the decisions of local school officials concerning the emphasis of the school curriculum. In general, this power-coercive metaphor seeks to mass political and economic power behind the change goals which the strategists of change have decided are desirable. These strategies tend to divide the society when there is a division of opinion and power in that society. Bennis, Benne, and Chin assert that when a power-coercive way of making decisions is accepted as natural, the power struggle shifts to the negotiation table where compromise and tradeoffs between competing interests may become the expected goals of the intergroup exchange.

The political metaphor suggests that all is not harmonious. There will be problems and value conflicts, writes House (1979). Not everyone wants the same thing. Opposing factions will either have to bargain and compromise or resort to political devices. Conflict is not only possible but probable;

however, a fundamental assumption is that there will be enough value consensus so that compromise can be achieved successfully even though securing the cooperation of others becomes problematic. One must reach agreements with others, must come to understanding, and must secure their assent before proceeding. To many, innovation is seen as political, and only through conflict is progress possible. The political metaphor assumes that differences will be resolved by bargaining.

Political power has traditionally played an important part in achieving changes in education. The process of re-education for persons who are to conduct themselves in new ways still has to be carried out. The new conduct often requires new knowledge, skills, attitudes, and value orientations. On the social level, new conduct may require changes in norms, roles, and relationship structures of the institutions involved. These changes combine political coercive and normative re-educative strategies, both before and after the political action (Bennis, Benne, and Chin 1971).

Cultural Metaphor

The cultural metaphor is not entirely new. According to Joyce and Weil (1972), this metaphor can be traced to Plato's Republic, Aristotle's The Work of Aristotle, Augustine's City of God, Sir Thomas More's Utopia, Comenius' The Great Didactic, and John Lock's Some Thoughts Concerning Education. More recently, John Dewey's Democracy and Education combined a view of society with a view of the intellectual process to develop a conception of education in which democratic processes were central. Herbert A. Thelen's Education and Human Quest and Donald Oliver and James Shaver's Teaching Public Issues in the High School are other books that have used this metaphor.

Joyce and Weil emphasize the relationship of the person to his society or his direct relationships with other people. They reflect a view of human

nature which gives priority to social relations and the creation of a better society; and, they see the processes by which reality is socially negotiated as vitally important. With respect to goals, the improvement of the individual's ability to relate to others is very important. The cultural metaphor places emphasis on the personal psychology and the emotional life of the individual. Heavy emphasis is also placed on social relations: how individuals conceptualize and relate to each other as people and how they relate to their society as a social institution. Each man constructs knowledge by reflecting on his own experience. The result is pluralistic and the essence of the democratic process is the creation of interaction among the unique, personal worlds of individuals so that a shared reality is created. This shared reality would embrace personal worlds and encourage their growth while providing for common investigation, growth, and governance.

McNeil (1977:5) breaks the cultural metaphor into five elements:

"1. Participation. There is consent, power-sharing, negotiations, and joint responsibility by co-participants. It is essentially nonauthoritarian and not unilateral.

2. Integration. There is interaction, interpenetration, and integration of thinking, feelings, and action.

3. Relevance. The subject matter is closely related to the basic needs and lives of the participants and is significant to them, both emetionally and intellectually.

4. Self. The self is a legitimate object of learning.

5. Goal. The social goal or purpose is to develop the whole person within a human society."

Sarason (1971) sees the school as a sub-culture of the culture. He portrays the school as a set of structures interacting roles in a tradition-dominated social setting. Goodlad (1975:205) asserts that an ecological model of education "in which both living and non-living things constitute a system and interact within it" is needed. The school culture, community, and school-community are all part or a total ecosystem. Goodlad's society is oriented

homeostatically towards maintenance of a stable environment. All are parts of the same system or ecosystem. Thus, power as used in the political metaphor would harm both the user and the one being used. Every person and every thing has consequences for all other persons and things. Nothing, according to Goodlad, is inconsequential. Individuality and uniqueness exist; but, both function and are understood in relation to the whole and to the other parts of the whole.

House (1979) believes that the cultural metaphor assumes a more fragmented society when there's more value consensus within social groups but less consensus among social groups. Separate parts of the system are seen as more different than alike. They must be approached cautiously as one would approach a foreign culture. This cultural metaphor is suggestive of societal fragmentation. The separate groups neither share values nor are they certain about another group's value system. Even common agreement is problematic since two different cultures may not understand each other. The possibilities for misunderstanding multiply. One must be concerned about the unanticipated effects of an innovation in an unknown culture. Action becomes difficult.

As the cultural metaphor develops, House expects to see anthropological change concepts such as cultural ecology, environmental adaptation, and multilinear evolution brought into play to explain educational change. Since culture is a unitary concept, the cultural metaphor can explain conflict only by portraying a clash between two distinct cultures or by utilizing concepts such as societal interaction.

This metaphor assumes that men are inherently active. The relation between man and his environment is transactional. Man, the organism, does not passively await given stimuli from his environment in order to respond. Intelligence arises in the process of shaping organism-environmental relations towards more adequate fitting and joining of organismic demands and environment resources.

Intelligence is social, rather than narrowly individual. Men are guided in their action by communicated meaning, norms, and institutions - by normative culture. At a personal level, men are guided by internalized meaning, habits, and values. Changes in patterns of action are changes at the personal level, in habits and values as well. Man must participate in his own re-education if he is to be re-educated at all.

Bennis, Benne, and Chin assert that the change agent seeks to avoid manipulation and indoctrination of the client. Those committed to this change approach tend to see the person as the basic unit of social organization. Persons are capable of creative, life-affirming, self-respecting responses, choices and actions. People must make a conscious effort to learn from their experiences of self-direction if change is to be maintained and continued.

The assumption is that the adopter is not passive, waiting for solutions from without, but rather is in active search of a solution to problems. The strategy is based on a psychotherapeutic model of change-agent (counsellor) and adopter (client) in which, with the collaboration of the agent, the client works out changes for himself. Therefore, the cousellor needs less technical training. There are two principle objectives.

These are:

1. to improve the problem-solving capacities of the client of adopting system, in particular the human relationship as these bear on the functioning of the system itself.
2. to bring self-clarity and personal development to the individuals within the system, on the premise that personal change will lead eventually to organizational changes.

The technological metaphor views man as rational and willing to change when given enough facts; change is a series of orderly steps; and technology

can solve man's problems. The political metaphor states that man can be changed under the tutelage of a change-agent; conflict leads to change; and, power is the power-coercive ingredient of all human action. The cultural metaphor views society as an ecosystem where all men are equal. Man constructs his knowledge by reflecting on his own experiences and needs to be an active participant in his own re-education. The following chart summarizes in more detail the three metaphors under various headings. See Figure 1, Page 19.

Inservice Education

We contend that the three dominant societal metaphors that we have just finished describing are apparent throughout all of education, particularly making their distinctions felt in the building and the carrying out of educational inservice. Inservice is an important aspect of educational change. It is a major vehicle used to promote change within education.

Arends, Hersh and Turner (1978) offer three reasons why inservice is important:

"1. with declining enrollments and related reductions in the workforce, schools must emphasize developing current human resources over hiring new ones.

2. as the demands for educational reform have grown louder, more schools have attempted to implement new programs that require new attitudes and skills on the part of current staff.

3. traditional practices for organizing inservice education and times of scarce resources have rendered many would-be providers of inservice impotent (Arends, Hersh and Turner 1978:196)."

Cooper and Hund (1978:61) identify five changes that suggest a need for continued inservice activities for teachers:

1. Changes in educational technology - methodology and equipment.

2. the advent of new techniques for daily instruction.

3. the dissemination of innovation and new programs.

FIGURE 1

Adopted from Kurt E. Olmosi (1972:191-2)

A Summary of the Three Metaphors

	Technological Metaphor	Political Metaphor	Cultural Metaphor
When introduced into the educational system	1960's	1970's	1970's
Basic assumptions	-everyone is pursuing a common end and that the context is not a problem. -everyone is reasonable and that what they need to make change are the essential elements; research, development and diffusion. If the environment or surroundings change, people have to change. People are rational. If you present enough facts to people, they will change. Man is seen as an extension of the machine. Invention and innovation follows a series of orderly steps. Technology is the Savior. Progress is seen as a linear development.	Not all is harmonious There may be problems and value flicts. -innovation is a part of a problem-solving process which goes on inside the user If all the really influential people agree to do something, it will be done. Conflict leads to change. If we have enough money or material wealth, we can buy anything or any change we want. Most people do not want to change If we can mobilize enough anger and force people, we'll look at problems around us, the required changes will be made. Not everyone wants the same thing; therefore must have bargaining and compromise. There is enough value consensus that compromise can be achieved.	Society if more fragmental - has more values consensus within groups but less consensus among social groups so that groups must be regarded as subcultures. Most problems are complex and overdetermined. A combination of approaches is usually required. If we have a good warm interpersonal relation, all other problems will be minor. Most problems are complex and overdetermined. A combination of approaches is usually required. Change involves change in attitudes, skills, values, and relationships. Man is not passive. Man must participate in his own re-education.
Inclusion	based on possession of technical skills and marketable resources. based on possession of knowledge and facts.	based on ability to deal with and use of conflict, power, coercion. based on possession of marketable resources.	get everybody in
Influence	based on specialized knowledge and expertise. by changing structure or task environment	based on level and breadth of perceived power, perceived wealth by feat of authority and threat of punishment. by non-violent argument.	everyone is equal based on knowledge and the degree to which decision will effect them.
Perceptual approach	task relevance and rationality, analytical and detached	narrow belief in "Truth" exploit for use of power structure. stereotype Ignore individual differences unless they relate to power.	ecclectic but situation centered. Accepts all. Shuts out none.
Emotional needs	autonomy, rationality, clarity, structure	control, attention, rationality, status and security expression of anger, expression of self.	warmth, love and trust emotional and intellectual integration.
good at	being aware of surroundings and/or environment Finding causes, Presenting relevant information	keeping order, forcing people to look at issues they may not want to acknowledge. Gaining attention and publicity Mobilizing power, implementing decisions.	using as much information as possible. mobilizing initial energy.
chronic problems	Implementing findings Mobilizing energy. Getting people to pay attention or read reports. Time consuming. Gaining acceptance for change. Dealing with unexpected consequences. Few people can control structure.	Maintaining change and/or satisfaction. Few people or groups have unlimited resources. Maintaining credibility. Fighting backlash. Finding alternatives Rebellion. Can never relax.	Financial support. Actual implementation of decisions. Maintaining long run commitment. Making itself understood. Not appearing "wishy-washy."
Questions suppressed	How well people feel about it? How do I feel about results? How should results be used?	Who should "really" make decisions? Is it "right?" Is anything in opponents argument worthwhile? Is my action consistent with my value system? Most feelings	How should I "really" do it? Do you really know what you are doing. What's in it for me? Competence? Individual differences?
Most often used by	Outsiders, People in staff positions. Top management, Department of Education. Educational Program Development Services	Corporations; The very wealthy Those in power; Revolutionary students. The poor Unions, military, police, Department of Education, Central Office of School Boards, School Boards.	Groups with limited power. Churches, Volunteer organizations, human relation consultants, organization development consultants. Teachers in the classrooms. T.-Groups, Teacher Centres.
Strategies most often used	rational-empirical	power-coercive, re-educative	normative - re-educative

(House 1979; Bennis, Benne, and Chin 1969, 1971; Havelock 1970; Johnson 1976, Lauer 1973; Schön 1979)

4. the discrepancy between preservice preparation and professional expectancies.

5. changes in the roles of teachers occasioned by a rapidly changing culture.

While inservice is an important aspect of the implementation of curriculum development, it is not without its problems. Agne (1978) states that inservice planning is woefully inadequate. Most school systems award relatively low priority to inservice programs. Too often, inservice programs grow out of such considerations as 1) who is available, 2) who receives enthusiastic reviews, and 3) what educational topics are au courant, rather than originating in the needs of the classroom and community. Wilen and Kindsvatter (1978) write that inservice education has, for the most part, been left for teachers to manage on an individual basis and at their own expense. Inservice has rarely been considered a high priority by school districts and, as a result, a substantial and continuous financial commitment to comprehensive staff development programs has been lacking. The one or two-day inservice programs and occasional summer workshops organized by school districts have been the most visible approach to staff development. But such workshops have had only minimal effect on teachers' instructional skills and student learning for at least three reasons (Wilen and Kindsvatter 1978). They are:

1. Teachers' attitudes towards inservice education have ranged from complacency to antagonism.

2. teachers have had little opportunity for input into the nature and design of the programs.

3. exposure to inservice education has lacked sufficient intensity to creat a critical impact.

Cooper and Hund (1978) state that the problems associated with traditional inservice training models focus on teacher attitudes, acquisition of skills, and generalization and/or maintenance of effect. Planning and assessment is usually executed by educational authorities other than the classroom teacher.

This tradition has sometimes resulted in an extreme bitterness within the teaching profession. The methodology of information disemination by large group lectures, small group discussions, and media presentations may not be suitable in meeting teachers' needs. And last, inservice trainers have not implemented procedures to generalize or maintain positive changes in teacher behavior. Houston and Freibert (1979) charge that inservice programs are like perpetual motion machines - they attempt to get something for nothing. In-service education receives little priority within the profession as school boards face mounting demands but tight budget restrictions. Programs are fashioned without regard to research finding; without an integrated plan including long-range goals; without being articulated with other resources programs, and community needs; and, sometimes even without the input of those purported to benefit.

Wood and Thompson (1980) summarize the ineffectiveness of inservice education in four statements:

1. Overcoming a negative attitude toward inservice attributable to: inadequate planning and organization, unrelatedness to personal day-to-day practice, non-participation by practitioners in the planning, inadequate needs assessment, unclear objectives, lack of follow-up in the classroom setting after training, and recognition that change is a gradual process.
2. Overcoming administrators' negative views about teachers with respect to inservice. Lack of motivation, need for cajoling, and lack of self-direction are common allegations.
3. Locating the inservice away from the classroom, over-emphasizing the receiving of information by telling rather than by doing, and failing to demonstrate the kinds of practices which teachers are to use in the classroom minimize the value of inservice.

4. Economic and moral support for professional development at school, district, and provincial levels, by administrative and elected officials is often lacking.

Kozuch (1978) writes that the most significant reason for ineffective inservice programs is the human factor of teacher perceptions (such as:)

1. unsatisfactory previous experiences with implementation.
2. persistence of teacher's previous orientation when a change of role or approach is required.
3. lack of conviction that change is needed.
4. conflict between teacher's conviction and perception of role as opposed to that being promoted in the inservice.
5. perceived inability to control working conditions when adjustments in those conditions appear necessary to accomplish the change.

Cruickshank, Lorish, and Thompson (1979:27) write that there are few clear concepts and definitions concerning inservice education. "There is not even agreement on what inservice education is." Also, they state, there is an absence of facts and conditional propositions. Without concepts and definitions, they continue, how can we carry on a dialogue? Without facts, how can we understand the many factes of a particular activity? Without conditional propositions, how do we know what will follow or result from any given action? Therefore, writing, discussions, and criticisms are almost exculsively rhetorical and more ornamental than useful.

Inservice has been defined in several ways. Each has its own frame of reference. The following are examples of the various perspectives used when defining inservice. See Figure 2, (page 23).

Writers do not agree that inservice is educational, training, or a program. Joyce, in a presentation in Edmonton in Fall, 1980, made no distinction between

FIGURE 2

Examples of Definitions of "Inservice"

Agne (1978:91)	"an employment-oriented educational site-specific training designed to meet the needs of a particular school system or community."
Anderson, Seonzo (1978:83)	"the sum of all planned activities designed for the purpose of improving, expanding, and renewing the skills, knowledge and abilities of participants."
Chambers (1977:13)	"process whereby the teacher is enabled to 'restore and/or maintain and/or develop or elaborate still further his vocational self-constructs of 'I am a teacher'."
Edelfelt and Johnson (1975:5)	"any professional development that a teacher undertakes singly or with other teachers after receiving his initial certification and after beginning professional practice."
Fisher (1978:56)	"causes of change in a pre-ordained direction through programs designed to improve the competences of personnel in education."
Henderson (1978:12)	"structural activities designed, exclusively or primarily, to improve professional performance."
Koneck, Stein (1978:43)	"job-specific educational program organized to meet the needs of employer and employee within the local setting."
Zigarmi, Betz, and Jenson (1977:545)	"individually-planned activities for the improvement of instructional development of staff members."

"education" and "training". This matter is frequently a heated debate in educational circles, writes Schwartz (1980). Other terms used by writers include employment, employees, employers, and employer-planned. These terms have very different meanings from professional development or professional performance. The purpose of an inservice for employees in incompatible with the purpose of inservice for professionals. Inservices that are individually-planned will be very different from inservices that are employer-planned. Many of the terms used in the definations are incompatible. The nature of the inservice will depend upon which frame of reference is the basis for in-service, how the questions are posed, and what purposes are to be achieved. The description of the problem depends on the stance used in discussing the problem and it, in turn, will indicate the direction of the solution. [There are many different conceptions of what an "effective inservice program is".] short, these conceptions are based, in large part, on the particular metaphor valued by the participants.

An Effective Inservice Program

Not only is there no common definition of the term inservice, there is no agreement as to what is involved in an effective inservice. Brimm and Tollett (1974:523) conducted a survey by means of a Teacher's Attitude Towards In-Service Inventory. Using a Likert-type scale, respondents were asked to react to a number of statements. Eighty-nine percent of the teachers surveyed felt that inservice should strengthen their professional competencies. Ninety-six percent felt that inservice should include activities which allow for the different interests which exist among teachers. Ninety percent of the teachers felt that inservice should help them to upgrade their classroom performances. Teachers also stated that inservice should also focus on the classroom aspect of teaching; and that teachers needed to be involved in the development of programs, activities and methods of evaluating inservice.

Joyce and Showers (1980) state that inservice educational programs should allow the trainees to go through three levels of impact before change can be ensured. The outcomes of training are: 1) awareness or the acquisition of concepts or organized knowledge; 2) the learning of principles and skills; and 3) the ability to apply those principles and skills in problem-solving activities.

Zigarmi, Beta, and Jensen (1977:545-555) concluded from a 1975 set of questionnaires given to a representative sampling of 1239 South Dakota teachers, that inservice must:

1) consist of many approaches to staff development;

2) be responsibe to teachers' needs;

3) build on the interest and strengths of teachers;

4) assume that teachers can be resources to each other;

5) involve teachers as planners.

Oliver (1980:394-395) states that an inservice program should assume that the "scientific inquiry approach is a valid and valuable tool that teachers, administrators and support personnel can use to translate educational goals into specific methods for achieving them."

Arends (1978:200-201) states that inservice should promote life-long learning for the individual professional. The needs of the "mature professional" are different from the needs of the younger professional. Inservice should allow mature professionsls to clarify career options, increase their interpersonal competencies, and actualize their potential as professionals. Inservice education programs, writes Arend, should allow teachers to integrate work and education into their life. It should take into account not only the teacher's knowledge, but also their intentions, competencies, beliefs, and actions. A mature professional is defined by Hunt (1978) as the fourth stage in the career development

of teachers. Hunt's four stages of the life cycle of a teacher are: survival, consolidation, renewal, and maturity. He states that inservice programs should give more attention to how teachers learn and to how teachers' learning styles are related to their teaching styles. Teachers then could become more able to personalize the learning experiences of their students.

Roy Bacon (1980), the co-ordinator of Inservice Education for the City of Manchester Education Department, England, offers four major categories of teachers:

1. Beginners - fresh, enthusiastic and optimistic.
2. Pioneers - leadership potential, motivated, committed, ambitious.
3. Maintainers - backbone of the professional, keep the school running, difuse problems.
4. Settlers - cynical, do not want help or advice, often near retirement.

According to Bacon, these four groups have four different types of inservice needs.

The task or goals of inservice have been described in a number of ways. Some writers discuss teachers' needs and career options, while others discuss the system's needs, student's needs or curriculum's needs. Teachers are labeled as clients, mature professionals, or trainees by writers and educators. Educational terms have different connotations. For example, a "mature professional" does not have the same connotation as "client." The term client refers to a psychotherapeutic system where there is a therapist and a client (Miles 1964:439). The client enters a two person temporary system which will last long enough for certain objectives to be reached. The term client indicates that there is something wrong which needs to be changed. The therapist knows what is wrong and he will manipulate the client into making a change, - a deficit change, writes Miles (1964). The mature professional will be involved in voluntary and self-imposed change - creative change.

Some writers suggest that inservice should be based on a step-by-step scientific inquiry approach while others have no particular implementation plan. When examining the ideas of the writers who describe the inservice experience, it becomes apparent that not everyone has the same expectations of inservice programs. Wood and Thompson (1980:374) write:

> "Inservice education, as it is constituted, is the slum of American education. It is disadvantaged, poverty-striken, neglected, and has little effect. Most staff development programs are irrevelevant and ineffective, a waste of time and money. Disjointed workshops and courses focus on information dissemination rather than stressing the use of information or appropriate practice in the classroom. Seldom are these programs part of a comprehensive plan to achieve goals set by the school staff."

Three Metaphors of Inservice Education

Certainly, there is little agreement about what constitutes good inservice education. We believe that the reason so little agreement exists is that little thought has been given to the underlying metaphors involved in each dominant model of inservice education. There are choices in how inservice might be conducted; and, we believe these choices have a direct correlation to the three dominant metaphors of Western society discussed earlier. Specifically, the technological metaphor produces the R.D. and D. inservice model. The political metaphor produces the problem-solving inservice model. And, third, the cultural metaphor produces the social interaction inservice model.

The Research, Development and Diffusion Model of Inservice (R.D. & D.): The Technological Metaphor

"The history of the Research, Development and Diffusion model of innovation goes back at least 20 years to the launching of Sputnik and to the attacks on the school curriculum by university scholars (House 1979:2)." The space race with Russia justified a curriculum reform movement that was elitist and dedicated

to the pursuits of excellence (MacDonald, Walker 1976). This model, writes House, goes back to the heady optimism and supreme confidence of the post war era, during the Kennedy years, when people believed that research for new knowledge and the proper technologizing and dissemination of that knowledge could solve technical, societal, or any problem that might be encountered. Solving problems was primarily a matter of attention, application, and money. A problem could be solved with the ministering and management of appropriate resources, whether that problem was the Vietnam war or education.

Goals for schools, however, reflect much of what is immediate in the surrounding society and are designed to be corrective (Goodlad 1975). Research funds for industry and the military far exceed funds for education. When educators were under pressure to make changes in the educational system, and their own research and development activities had been inadequate to their problems, they often reached over and borrowed research theory and method from other fields (Johnson 1976:6-7).

House (1974) suggests that when problems became acute enough, like the education problem of the 1960's, they could always be fixed by the application of resources and technological know-how. A package could be mass produced and widely disseminated. These solutions were relatively inexpensive per unit and highly profitable for those producing them. The producer controls the process and the type of innovation.

The "Clark-Guba" model (1965) was the first innovation model borrowed from industry and the military. This model assumes:

1. that research was a primary importance and proposed, unquestioningly to get research findings to use (MacDonald and Walker 1976).
2. that dissemination and implementation are technical problems giving rise to purely technical solutions (MacDonald and Walker 1976).

3. that a central expert is not available to the average teacher (Becker and Maclure 1978).
4. that learning materials could be engineered in the way that a new household product could be produced (Becker and Maclure 1978).
5. that knowledge has something that could be delivered in "packages" and was largely independent of personal interaction between teachers and those taught (Becker and Maclure 1978).
6. that "There should be a rational sequence (for the developer in the evolution and application of an innovation. This sequence should include research, development and packaging before mass dissemination takes place" (Havelock and Havelock 1973:12).
7. that there has to be planning, usually on a massive scale over a long period of time (Havelock and Havelock 1973:12).
8. that there has to be a division and co-ordination of labor to be in accord with the rational sequence and the planning (Havelock and Havelock 1973:12).
9. that a more-or-less passive but rational consumer will accept and adopt the innovation offered to him in the right place, at the right time, and in the right form (Havelock and Havelock 1973:12).
10. that proponents of this viewpoint accept the fact of a high initial development cost prior to any dissemination activity because of the aniticpated long-term benefits in efficiency and quality of the innovation and its suitability for mass audience dissemination (Havelock and Havelock 1973:12)."

Becker and Maclure (1978) maintain that the reasoning behind the R.D. and D. model is intuitively attractive for education. In simplified terms, it first identifies the underlying aims of teaching that subject with which development

is concerned. Next, it considers what is known about the best method of achieving those aims. Finally, it applies these methods to the presentation of the required subject content. Appropriate teaching materials can then be devised, tried out, revised in the light of the trials and made generally available. The resulting product, based on agreed aims, and perfected by field trials, must be virtually certain to meet classroom needs.

Bhola (1977) states the Research, Development and Diffusion model is rational in the sense that it does not necessarily concern itself with the politics of change or with the sociology of systems within which changes are initiated. According to Bhola, there are three requirements for change:

1. educational research - this research must go through a process of development through which practical applications for it are found.
2. educational development - the research must be translated into instructional materials and approaches.
3. systematic diffusion of what is developed - the developer must bring the product of development - an innovation - to the attention of practitioners and client group.

Maclure and Walker (1976) assert that the R.D. and D. model looks at the point of view of the originator of an innovation and begins with the formulation of a problem based on a presumed receiver. The initiative in setting the problem is taken by the developer, not the receiver. Change is depicted as an orderly sequence which begins with the identification of a problem. The receiver is referred to as the "target system". The client system may range in size from an individual person to an entire system or nation. The phrase "target system" and "plans of attack" are terms from the military metaphor. The R.D. and D. model was not only a model of change; it was also a model for change, a blue print for the future (MacDonald, Walker 1976); a model for "attacking" change.

Advantages of the Research, Development and Diffusion Model

To many people, information is the primary business of education. This particular model emphasizes content, which might explain why it is the most popular inservice model. The benefits of this model are its focus on content, relevant information, and skills. If these are the objectives of an inservice model, then this is the choice model.

Problems and Evaluation of the R.D. and D. Model

House (1974:221) quotes Havelock (1971) as criticizing the R.D. and D. model as "over-rational, over-idealized, excessively research-oriented, and inadequately user-oriented". House also states that the materials and programs that did emerge were few, often poor in quality, and not attuned to individual school needs. These products, with few exceptions, were mostly ignored by school personnel.

"The very essence of the R.D. and D. approach is control . . . " House (1974:223) suggests that this paradigm treats the practitioner as passive and slightly resistant. However, being constrained may not be the same as being passive. The practitioner is placed in the position of a consumer who is going to be sold goods which he has the option either to buy or to reject. The practitioner in his classroom is, however, beyond the power of almost everyone; and, he often chooses not to buy.

House (1974) states that the R.D. and D. model assumes innovation will be invented, developed, and passed along the linear chain. This model might work if all the actors shared the same values. But, they do not. The direction and co-ordination of this model require a great deal of global planning, and it is this facet that may appeal most to government officials. However, massive planning does not compel people to implement the plans. When plans deviate from people's self-interest and the way they perceive the world, they are merely

pieces of paper. The research, development, diffusion paradigm is consistently rational only from the viewpoint of global government planners. It is not necessarily rational from the point of view of the consumer.

Becker and Maclure's (1978) evaluation of the R.D. and D. model examines each of the successive stages of the model. It is by no means easy to identify aims or even to agree on the function of any given subject in the curriculum. To find a middle way between being general and vacuous and specific and stultifying is far from easy. Having decided on aims, the R.D. and D. model calls on research to reveal the best teaching method. But, much of the useful information about the best ways to teach is intuitive and anecdotal rather than scientific and systematic. Even if a development team had managed to set out an appropriate statement of its aim and a teaching approach which relates to those aims, the aims must be clothed in practical forms.

The trial stage of the R.D. and D. model, Becker and Maclure state, is intended to compensate for any errors of judgement which might have occured in the previous stages. By testing draft materials in the classroom and carefully collecting feedback information on what works and what does not, it should be possible to turn a working prototype into a satisfactory finished product. However, most trial stages are simply too short to enable the developers to stand back and take an overall view of the effects of the process.

Becker and Maclure assert that diffusion, however, generally reveals the major weakness of any product. The R.D. and D. model assumes that once a set of materials has been perfected from trial to revision there is little that remains to be done beyond making the materials available to schools. However. classroom materials often fail to carry the message; and, this begins to raise questions about whether materials are really the appropriate medium after all.

Problem-Solving Model (P-S): The Political Metaphor

The problem-solving model is built around the user of the inservice and assumes that inservice is part of a problem-solving process which occurs within the user (Havelock and Havelock 1973:8). Huberman (1973:63) states the problem-solving model assumes that the user has a definite need that inservice can satisfy. Thus the process is from the diagnosis of a need to trial and adoption. Often an external change-agent, writes Huberman (1973), is required to counsel individuals on possible solutions and implementations strategies; but, the emphasis is on client-centered collaboration rather than on manipulation from without. Huberman asserts that there are two processes at work. The first is re-education, the becoming aware of and correcting inefficient or dysfunctional habits and attitudes; the second is educational development, being designed to add new skills, knowledge, practices or attitudes to a person or group.

Huberman (1973) views the principle characteristics of the problem-solving model as

1. an emphasis on solving problems through internal restructuring, where the receiver is directly involved in the situation.
2. frequent use of a temporary "change-agent" or consultant from outside.
3. concern with attitude change, re-adjustment of interpersonal relations and communications.

Many authors discuss the work of the change-agent (Rogers and Shoemaker, 1971; Rogers, 1962 and Havelock, 1970). Huberman (1973:63) states that the change process may be initiated either by the receiver or by the change-agent; but, in either case the receiver must want to change and must participate fully in bringing the change about if it is to be successful. Huberman sees the change agent or consultant coming into the organization (client-system) where the model for change is the:

1. development of a need for change
2. establishment of a change relationship between agent and client
3. clarification or diagnosis of client's system's problem
4. examination of alternative routes and goals, establishing goals and action required
5. transformation of intentions into actual change efforts
6. generalization and stabilization of change
7. achievement of a terminal relationship

Most of the time, the model assumes, people do not want change. People want to keep things the way they are even when outsiders state that change is required. For that reason, change agents are needed to overcome inertia, to prod and pressure the system and the people to be less complacent and to start working on serious problems.

Havelock (1970) views the problem-solving model as beginning with pressure from the inside or outside that disturbs the status quo. The view of crisis in the problem-solving model is seen by Havelock and Havelock (1973:143) when political groups, boards of education, and top administrators seek to maintain and/or maximize their power. Policy decisions are likely to be made in an authoritarian manner with little or no collaboration with the user groups of the client system. Miles (1964) proposes that social change is a matter of the application of personal or group power based upon prestige, competence, control of money and resources, legal authority, policy, precedent, custom, or co-operation and collaboration.

Educational inservice is, for House (1974), a product of the interaction of factional groups competing for resources in attempts to incluence and control each other and their own members. The problem-solving model of inservice is an attempt by the centre to capture control of the periphery. House views politics

and power relationships as key concepts in the analysis of the change process. House (1974) feels the centre-periphery control system will succeed. He says that it is difficult to see how education can be personalized because the large education systems demand the production of standardized materials for a mass market and because the centre will continue to control "the power" and create conflict.

Advantages of the Problem-Solving Model

This model focuses on control or keeping order, goals, and means. It forces people to look at issues they may not want to acknowledge. Because government agencies and other power groups are able to mobilize the power, gain attention and publicize the issue, they utilize this model to implement their decisions. These same agencies have the economic and political powers that are needed to research, develop, and difuse solutions for educational problems. For example, Alberta's Department of Education can avail themselves of educators from all over the province and elsewhere; they can draw on information from a wide range of sources; they can develop and distribute visual materials to all schools in the province cheaply and they can analyze, evaluate, and recommend materials more cheaply than small groups of teachers involved in social-Interaction model.

Problems of the Problem-Solving Model

Bennis, Benne, and Chin (1961), state that in its emphasis to produce materials that meet teacher's existing needs, and leaving teachers to put their own interpretations on such materials, the strategy goes along with the current teaching traditions rather than attempting to make any radical changes. In designing its materials to be all things to all people, this model misses the opportunity to link curriculum development more closely to inservice training.

The main difficulty with the P-S model Bennis, Benne, and Chin state is, however, embodied in the very conception of a problem-solving approach. Ideally, such an approach should imply a close investigation of each client school's particular needs, and the specific solution geared to those needs. In fact, resources for curriculum development are likely to be far too limited for such a close client-consultant relationship between development teams and individual schools or teacher. The P-S model is too labor intensive.

Social-Interaction Model (S-I): The Cultural Metaphor

Huberman (1973) refers to this model as the social-interaction model because the potential adopter generally hears of the new practice and decides to use it in consultation with other persons. This process involves:

1. sensing - external trends and resources, internal problems.
2. screening - deciding whether the items merit further investigation, setting priorities.
3. diagnosing - analysing the internal problem or new practice.
4. introducing - strategy planning.
5. operating on an experimental basis.
6. evaluating the results.
7. revising (Huberman, 1973).

In this process, the unit of analysis is the individual receiver, with the focus on the receiver's perception of a response to knowledge coming from without. The most effective means of spreading information about innovation is by means of personal contact. The key to adoption is the social interaction among members of the adopting group.

The adoption sequence is seen by Huberman as:

1. Awareness - the individual is exposed to the innovation: awareness creates a need for the inservice.

2. Interest - the individual seeks information about the innovation.
3. Evaluation - the individual applies the innovation to his present and anticipated situation, and decides whether or not to try it.
4. Trial - the individual uses the innovation on a small scale, in order to judge its utility in his own situation.
5. Adoption - the results of the trial are considered, after which the decision is made to adopt or reject the innovation.

At each stage, continues Huberman, the potential adopter generally turns to different sources of information, i.e. colleagues, friends, and professional sources. The key feature is the relation of leader to group. Psychologists have shown that identification in a group, or with a group leader, plays an important role in diffusing new ideas since people will adopt and maintain attitudes and behaviors which they associate with their "reference" group. Therefore, diffusion and adoption of the social-interaction model emphasizes the importance of inter-personal networks of information, of opinion leadership, personal contact and social integration. The focus is on the user or communicator, and a variety of dissemination strategies. Because the structure is loose, it adopts shifts of meaningful direction and is flexible enough to regroup around the "new". There is not enough time to change the social network into an organization before a new transformation occurs (MacDonald, Walker 1976).

Becker and Maclure (1978) write that this model is based on a number of assumptions:

1. Once the work of the local groups, perpheries, gathered momentum, it would need very little in the way of continued support.
2. Every teacher has the time, the talents, and the motivation to take an active part in the developing of new teaching approaches and the

classroom materials that go with them; and, teachers are prepared to put the necessary effort into contributing to a common pool of ideas and experiences.

3. Every teacher can "do his own thing" in curriculum development.
4. Local networks of teachers' centers, once stimulated into action by a central team, will continue not only to generate new ideas, but to circulate these amongst themselves and to build up a common bank of curriculum resources.

Havelock (1971, 1973) poses five generalizations about the social-interaction model. They are:

1. The individual user or adopter belongs to a network of social relations which largely influences his adoption behavior.
2. The individual's place in the network (centrality, peripherality, isolation) is a good predictor of his rate of acceptance of new ideas.
3. Informal personal contact is a vital part of the influence and adoption process.
4. Group membership and reference group identification are major predictors of the individual adoption.
5. The rate of diffusion through a social system follows a predictable S-curve pattern [a very slow beginning followed by a period of very rapid diffusion, followed in turn by a long late-adopter or "laggard" period (Havelock 1973).]

Huberman (1973) states that the social interaction metaphor emphasizes the aspect of diffusion, the movement of messages from person to person and system to system. It stresses the importance of inter-personal networks of information, opinion leadership, personal contact, and social integration. The metaphor assumes that each member in the system will proceed through the awareness-adoption cycle using a process of social communication with his colleagues.

The diffusion of the innovation depends greatly upon the channels of communications within the receiver group, since information about the innovation is transmitted primarily through the social interaction of the group members (Huberman 1973). The model focuses on the receiver's perception of and response to knowledge from without.

Advantages of the Social-Interaction Model

This model is a professional development and personal growth model. It focuses on the development of the mind and the self as well as the learning of academic material. It views change as a democratic process where reality is socially negotiated. Because of its ability to draw on the initial energy of the group and the process of group interadtion, this model involves a diverse audience of teachers, curriculum developers, and material makers. Small groups of people who define and attempt to solve a problem together are the basis of this model. Because the group is involved voluntarily in initiating change, its contingency for actual change is very high.

Problems of the S-I Model

This model is not without its problems. Becker and Maclure (1978) say that the first limitation concerns the neutrality of the central team. To reflect the best existing practice, the central team has to make judgements on what is best. It is very easy for the periphery to form views, values, and ideologies that could be at the expense of provincial curriculum. The periphery teams may use only examples of current practices rather than using alternative resources and teaching suggestions, because they do not know other alternatives.

Often the enthusiasts, Becker and Maclure state, who take part in local development activity are too few and their production is too unrepresentative of the ordinary teacher's needs for them to be focal points of development.

Moreover, because their resources are limited, the quality of what they have produced has tended to compare unfavorably with that of a well-funded R.D. and D. project manned by a fulltime team often recruited on a national basis.

Becker and Maclure write that to develop a highly sequential program which students can work through largely on their own can demand at least forty hours of preparation for every hour of classroom use. Another deficiency of this model is time. Not every teacher, even if he had the time, would possess the necessary combination of skills to undertake an effective redesign of the curriculum in a given subject. The job requires a complex blend of creative imagination, technical expertise in ways of presenting information and ideas, a wide knowledge of the subject matter, and an appreciation of the pupils' interests and the way in which they can best be helped to learn. These talents are combined in a few individuals. Only a relatively small proportion of teachers will, in practice, want to involve themselves actively in the work of innovation.

Another limitation of the social-interaction model is that there is no established tradition of rapid communication between practicioners in different localities; therefore, once the central team has been disbanded, the small periphery also disband except for a few isolated groups. "The social-interaction model is flawed by the romance illusion (Becker and Maclure 1978:74)".

Why is the diffusion of innovation through inservice education programs weak? The problem that has plagued the sponsors and planners of curriculum innovation is not the problem of creation, but the problem of impact, the problem of diffusion. Neither the schools nor the teachers apparently have been transformed by all the organized, systematized, specialized efforts of the professional innovator. Miles (1964) claims that there is no adequate theory of social change. Rogers and Shoemaker (1971) explain that the process of social change consists of three sequential steps:

1. Invention is the process by which new ideas are created or developed.
2. Diffusion is the process by which these new ideas are communicated to the members of a social system.
3. Consequences are the changes that occur within a social system as a result of the adoption or rejection of the innovation.

Change, continue Roger and Shoemaker, occurs when a new idea's use or rejection has an effect. Social change is therefore an effect of communication. And, in communication, the metaphors used become extremely important to acceptance.

Separately, each of the three models illuminates one perspective of the innovation process and suggests techniques for accelerating changes. The research, development and diffusion model concentrates on the origins of the innovator, the problem-solving model on the dynamics of the individual adoption, and the social-interaction model on wide diffusion throughout an organization or an educational system. The R.D. and D. model indicates that we lack institutional structures for designing and developing new ideas and materials; the problem-solving model shows the lack of processes for implementing changes once they are undertaken; the social interaction models shows that we have few vehicles for dissemination of an innovation to a larger public. None of these models is fully developed in practice, nor has any attempt been made to combine the three perspectives into a general paradigm. The following chart summarizes in more detail the three inservice models under various headings. (See Figure 3, page 42.)

Towards Understanding the Nature of Inservice

All inservice educational programs must answer two basic questions. These two questions are fundamental to inservice and, depending on the answer, an analyst can better decipher the metaphors that underlie each inservice model.

FIGURE 3

Adopted from:
Becker and Maclure
(1978:79)

Summary of the Inservice Models

	R.D. and D. model	P-S model	S-I model
When introduced into education	1960's	1970's	1970's
Basic assumptions	research is of primary importance; implementation is a technical problem; the teacher is a passive adopter, non-expert; knowledge can be packaged; government is best able to "long range plan"; there has to be a division and co-ordination of labor; everyone shares the same ideals and values.	there must be conflict to have change; teachers must be re-educated; change agents initiate change; teachers do not want to change; users needs are important but the "expert" decides those needs; Problem-solving should be collaborated or negotiated.	once change begins, it is self-directed; teachers have the time, talents, knowledge, and motivation to change; most effective way to spread information is personal contact; Diffusion occurs best from person-to-person.
view of knowledge	packages (subject disciplines)	problems (interdisciplinary inquiry)	personal exploration (eclectic searches)
Dissemination	Teachers as passive (rational recipients)	Teachers as representative (token?) participants	Teachers as (partial?) developers
View of humanity	people as things (manipulable)	people as social animals	people as individuals
perceptual approach	Task relevance and rationality	stereotype, ignore individual differences	accepts all, shuts out none
Most often used by	government agencies, top management	Those in power	Teachers Centres, small groups individual schools, T-Groups
Key Words	linear change, product, data scientific research, clients, passive receiver, change agents, mass produced, packaging, division of labor, co-ordination of labor, passive consumer, mass audience dissemination, quality goods, educational research, systematic diffusion, educational development	power, control, deficit change, change agent, accountability, efficiency, clients, knowledge is power, profit, user, receiver, client-centered, re-education, competency, collaboration, catalyst, solution giver, process helper, psychotherapeutic model, counsellor	networks, teachers' needs, social interaction, communication skills, collaboration, professional development, life skills, ecosystems, creative change, "quality of life", self-renewal, receiver
Definition	(Fisher 1978:56) "Causes of change in a preordained direction through programs designed to improve the competence of personnel in education."	(Agne 1978: 97) "employment-oriented education, site-specified training designed to meet the needs of a particular school system or community."	(Chambers 1977:13) "a process whereby the teacher is enabled to "restore" and/or maintain and/or develop elaborate skills further his "vocational self-construct" of "I a- a teacher."
Stages within inservice	1. Invention or discovery of innovation 2. Development (working out problems). 3. Production and packaging 4. Dissemination to mass audience	1. Translation of need to problem 2. Diagnosis of problem 3. Search and retrieval of information 4. Adaptation of innovation 5. Trial 6. Evaluation of trial in terms of need satisfaction	1. Awareness of innovation 2. Interest in it 3. Evaluation of its appropriateness 4. Trial 5. Adoption for permanent use
Problems	innovation is a linear process; all do not share the same values and not rational from viewpoint of the consumer; packages are of poor quality; not easy to identify common aims; which strategy is the 'best', trial stage never long enough or adequate; not enough time to develop the innovation.	assumed user had a definite need for change; there is an emphasis on producing materials, leaving teachers to place own interpretations on them; lack of inservice training; lack of concern for individual's needs, or school needs; too labor intensive	teachers do not have time, talent or motivation to take part in innovation development; enthusiasm "wears out"; limited resources and time; inadequate knowledge on current innovations; network disintegrates after a period of time; lack of communication networks.

(Havelock 1971, Johnson 1976, House 1974, 1979, Becker and Maclure 1978, Rogers 1962, Huberman 1973, Bennis, Benne, and Chin 1961, Schon 1979)

These same questions can be utilized by an analyst or by a potential adopter evaluating a specific inservice program. The two questions are:

1. What is the educational problem?
2. How will the specific inservice program and/or model solve the problem?

#1 What is the educational problem?

Adopting Schon's (1979) theory, discussed earlier, the framing of the problem is more crucial than any other part of the problem-solving process. Each view of the problem conveys a different view of reality and represents a special way of "seeing". The ways in which the developer states the educational problem determines the kinds of purposes, the values these purposes seek to realize, and the direction in which the developer seeks solutions. In these ways, metaphors generate their own solutions.

Developers, using the technological metaphor, will view and state the problem from a technological stance. For example, technology is seen as the answer to society's problems; research is of primary importance; research, development, and diffusion are the essential elements of change; and man is seen as an extension of the machine and as a passive consumer. The developer is a technician, a government agency, or a manager. School Boards, Department of Education, or other people in power will generally use the political metaphor. These developers tend to view change only from a conflict perspective. They view men as social animals who change, but who resist change. The third group of developers use a cultural metaphor. Everyone is seen as part of the ecosystem because social relationships are fundamentally important. All members are considered equal. Man is not passive and must participate in his own re-education.

#2 How will the specific inservice model and/or program solve the problem?

Schon (1979) states that, in analyzing a problem, the description of the problem depends on the metaphor used in discussing that problem. Similarily,

the ways in which a developer states educational problems determines the solution of the problem. A developer using a technological metaphor will frame the educational problems in the same stance, will develop an inservice program in the same praxis, and will evaluate success in the same metaphor. Within that inservice model he will choose:

1. the strategies.
2. the role of the change-agent.
3. the key words and concepts in describing the inservice program.
4. the change process in congruence with his metaphoric perspective.
5. the objectives and goals of the inservice.

A developer with a cultural stance or a political stance will frame the educational problems within a cultural or political stance, will develop an inservice in the same praxis, and his criteria for evaluating success will be drawn from the same metaphors.

The assumptions of a specific inservice represent the metaphor of a developer. A particular model will be selected because it echoes what the developer views as the problem. The developer, himself, may not be aware of his particular metaphorical perspective or the assumptions that accompany it, but he still functions basically within a specific metaphor and a particular set of assumptions. He may have an eclectic perspective, but he will be dominant in one of those perspectives. Schon (1979) emphasizes the extent to which metaphors can constrain and sometimes control the way in which we construct the world. These assumptions include the developer's and the inservice model's view of the world, of man, and of the teacher. As stated earlier, the Research Development and Diffusion model's root metaphor is technological. The metaphor for the Problem-Solving model is political, and, the metaphor for the Social-Interaction is cultural.

All three inservice models and their developers view progress in the Western tradition. Progress is seen as linear development where each step is a step forward, getting better and better. Therefore, change is natural and good. However, how change should occur differs in each model and depends on philosophical assumptions and root metaphors. The Research, Development and Diffusion model views change as deficit because it views man as passive and concludes that man will have to be convinced that change is necessary. Change is also viewed as deficit by the Problem-Solving model because man resists change and, therefore, must be persuaded that change is required. The Social-Interaction model considers change as creative because teachers will participate in their own re-education. As well as being the receivers of the change, they are also the developers.

The way in which a developer defines an educational problem will determine the direction of the solution. If the materials are seen as the problem, the Research, Development and Diffusion model will be chosen to solve the problem because the learning package is the target of the change. However, if the problem is framed towards the teacher, the answer to the problem and the target for the inservice model will be to change the teacher. The teacher will be expected to change his attitudes, skills, values and/or teaching strategies. But when teachers themselves frame an educational problem and elect to change, or to expand or develop new attitudes, skills, vlaues or methodologies, their inservice educational programs will be developed on the Social-Interaction model. This model depends on social interaction, self-help, and personal exploration. The model views teachers as individuals who can and will change because they initiate change.

The developer and the Research, Development and Diffusion model of inservice expects the materials to change the teacher because teachers are rational. When teachers are presented with enough facts and research, they will change. Developers employing the Problem-Solving model will expect the change-agent to effect the

change. Change-agents expect their clients to change through the use of power-coercive, manipulative and/or collaborative techniques. This is a psychotherapeutic model. Those developers practicing the Social-Interaction model assume the teachers will affect the change because they are the ones who initiated the change based on their own needs.

The developer of the Research, Development and Diffusion model's stance is that the material, package, or kit will function as a change-agent. The teacher is rational and reasonable. If he is presented with enough facts at the right time and in the right place he will change; therefore, there is no need to be concerned with an elaborate innovation process utilizing a change-agent. The developer using the Problem-Solving model defines a change-agent as a professional person who attempts to influence adoption decisions in a direction that he feels is desirable. The change-agent is also the communication link between the bureaucratic system and the client system. He is an expert who may act in one of three ways: he may be a catalyst, a solution giver, or a process helper. The Problem-Solving inservice model's success evolves around the success of the change-agent. A change-agent in the Social-Interaction inservice model is not mandatory; however, he may be invited to join as an equal praticipating member of the inservice project, but he will not have a dominant well-defined role. The developers of the Social-Interaction model view the change-agent as one who has an expertise that they themselves do not have, but which can be merged into their body of knowledge and skills.

The following summary charts might demonstrate better the differences between the three dominant inservice education models.

FIGURE 4

Questions that will determine which inservice model is dominant

Question	R.D. & D. Model	P-S Model	S-I Model
Who will frame the initial problems that initiate the inservice?	developer	government agencies, school boards, change-agent, pressure from out of client-system.	teachers, with the help of a change agent.
What will the inservice focus on?	content, materials, cognitive objectives, a set of facts and and theories which are turned into ideas for useful products and services.	attitude change of teachers, new techniques, new skills, new value orientation, new conduct.	new skills, new values, orientations, new conduct, personal growth, professional development; new/ development of attitudes.
Who/What is the target of the change?	curriculum, materials	Teacher re-education, through materials and strategies	Teachers, curriculum, materials, strategies.
Who/What will affect the change?	materials, the process, the package	change-agents	teachers
Who will assess the needs of the teacher?	the developer	outside experts who may negotiate with the teachers.	the teachers who may invite in a change-agent.
Which root metaphor is the basis for the in-service model?	Technological	Political	Cultural
What view of the world is inherent in the model related to its root metaphor?	technology is the solution to man's problem	change will not occur unless there is conflict, negotiation, and compromise.	education is an 'ecosystem', everyone is included, no one on the outside trying to do something to someone on the inside, social relationships
How is man viewed by the inservice model through its metaphor?	Man is a passive receiver or user.	man waits passively until he is given stimuli from his environment in order to respond.	a man is inherently active, is capable of creative life
How will the teacher be viewed?	passive consumer or user, "as things", clients	client, user, "social animals"	receiver, as an individual
What are the assumptions of the inservice model based on their root metaphors?	-everyone is pursuing a common end and that the context is not a problem. -everyone is reasonable. what people need to make change are the essential elements; research, development and diffusion. If the environment or surroundings change, people have to change. People are rational. If you present enough facts to people they will change. Man is seen as an extension of the machine. Invention and innovation follows a series of orderly steps. Progress is seen as a linear development. Technology is seen as the answer to society's problems. Innovation can be controlled, managed and justified. Development and application of technology will solve man's problems.	Not all is harmonious. There may be problems and value conflicts. -Innovation is a part of a problem-solving process which goes on inside the user. If all the really influential people agree to do something, it will be done. Conflict leads to change. If we have enough money or material wealth, we can buy anything or any change we want. Most people do not want to change. If we can mobilize enough anger and force people. To look at problems around us the required changes will be made. man acts on the basis of power relationships - they can be legitimate or coercive.	Society is more fragmental has more values consensus within groups but less consensus among social groups so that groups must be regarded as subcultures. Most problems are complex. A combination of approaches is usually required. If we have a good warm interpersonal relation, all other problems will be minor. Change involves change in attitudes, skills, values, and relationships. Man is not passive. Man must participate in his own re-education.
How is change defined by the model?	linear, deficit change - (change by crisis, competition or conflict, strikes, internal strife or dissatisfaction.)	linear, deficit change	creative change - (voluntary, self-imposed, defining problems, recognizing new problems and creating new ways of handling them, boredom, just to break a habit or routine.)

FIGURE 5

Questions that will determine which inservice model is dominant

Question	R.D. & D. Model	P-S Model	S-I Model
What are the change processes of each model?	1. Invention or discovery of innovation. 2. Development (working out problems). 3. Production and packaging 4. Dissemination to mass audience.	1. Translation of need to problem. 2. Diagnosis of problem 3. Search and retrieval of information. 4. Adaptation of innovation 5. Trial 6. Evaluation of trial in terms of need satisfaction.	1. Awareness of innovation. 2. Interest in it. 3. Evaluation of its appropriateness 4. Trial 5. Adoption for permanent use.
What are the expectations of the implementation of each model? (What is the criteria for success used by the developer?)	solves man's problems with products and development and applications of technology. New materials, hardware, kits, curriculum are employed in the classroom.	outcomes that can be measured; group achievements at what rate; productivity is either increasing or decreasing, teachers practice "change".	change of attitudes, skills, growth of skills, increase of information, professional development.
What are the assumptions of the inservice models?	research is of primary importance; implementation is a technical problem; the teacher is a passive adopter, non-expert; knowledge can be packaged; government is best able to "long range plan"; there has to be a division and co-ordination of labor; everyone shares the same ideals and values.	there must be conflict to have change; teachers must be re-educated; change agents initiate change; teachers do not want to change; users' needs are important, but the "exper" decides those needs; Problem-solving should be collaborated or negotiated.	once change begins, it is self-directed; teachers have the time, talents, knowledge, and motivation to change; most effective way to spread information is personal contact; Diffusion occurs best from person-to-person.
How will the change-agent be viewed by the model/developers?	facilitator, process helper, expert	expert, facilitator, process helper, manipulator - a communication link between the bureaucracy system and the client system.	collaborator who avoids manipulation and indoctrination.
What strategies will be employed?	empirical-rational (lectures, pre-developed questions and answers, observing others, illustrated lecture, use of hard-ware - Video-tapes, slide presentation.)	re-educative (power coercive, demonstration and observation lectures, predeveloped questions and answers, illustrated lectures, role-playing, guided practice, simulations.)	Normative re-education (buzz sessions, role playing, guided practice, brain storming, interviewing, group discussion, demonstration, observation, simulations, feed-back, comeback sessions, evaluation.)
What are the key words used in each model?	linear change, product, data scientific research, clients, passive receiver, change agents, mass produced, packaging, division of labor, co-ordination of labor, passive consumer, mass audience dissemination, quality goods, educational research, systematic diffusion, educational development.	power, control, deficit change, change agent, accountability, efficiency, clients, knowledge is power, profit, user, receiver, client-centered, re-education, competency, collaboration, catalyst, solution giver, process helper, psychotherapeutic model, counsellor.	networks, teachers' needs, social interaction, communication skills, collaboration, professional development, life skills, ecosystems, creative change, "quality of life", self-renewal, receiver.
What are the questions suppressed by each of the models?	How satisfied people feel about it? How do I feel about results? How should results be used?	Who should "really" make decisions? Is it "right?" Is anything in the opponents argument worthwhile? Is my action consistent with my value system? Most feelings.	How should I "really" do it? Do you really know what you are doing? What's in it for me? Competence? Individual differences?

Summary

The purpose of this article was to examine three metaphors (technological, political and cultural) commonly found in our society and apply them to three dominent inservice models (Research, Development and Diffusion, Problem-Solving, and Social-Interaction) that are part of the implementation stage of educational innovation. We have suggested that, for inservice education, there is no single definition, concept, methodology, or expectation. The basic perspectives of the developer are often very different from the perspectives of the adopters of the inservice program. Each sees educational problems differently. Thus, dichotomies within inservice programs exist.

Metaphors can control the way we construct the world. They often serve as ways of channelling action and generate their own solutions by the way their presence structures and defines the problem we see. Metaphors are central to how we think about the world. Only by recognizing which metaphors we are utilizing to solve a problem, then criticizing the metaphor, can we learn to become reflective about the problem-solving process and to consciously select the perspective which shapes our responses to current educational problems. It is only when we can become involved in a critical inquiry focused on metaphoric language structures that we can understand the nature of inservice educational programs.

The three metaphors central to this article were the technological, the political, and the cultural metaphors. The technological metaphor views the world through the dynamics of industrial change. The act of research begins as a set of facts and theories which can be turned into ideas for useful products and services. Knowledge is power. Science can solve man's problems. Man is treated as an extension of the machine. Innovation can be controlled, managed, and justified.

The political metaphor contends that conflict, competition, compromise, and negotiations are the basis for change. There must be a superior power and a lesser power so that opposing factions can bargain and compromise. Concepts of industrial efficiency, economic growth, marketable resources, and military expendiency are important aspects of this metaphor. Reinforcement and stimulus control, B.F. Skinner's Theory of Operant Conditioning, represent the process by which human behavior becomes shaped into certain patterns by external forces (Joyce- Weil 1972). Face-to-face interaction is an important aspect of this metaphor.

The relationships of the person to his society and his direct relationships with other people form the basis of the cultural metaphor. This metaphor emphasizes the personal psychology and emotional life of the individual. Each person constructs knowledge by reflecting on his own experiences. Society is viewed as numerous subcultures, each different but all part of the same ecosystem. No force on the outside has control over someone on the inside. Change is personal and focused on habits and values, which in turn, effect the whole society.

Each of the three inservice models illuminate one perspective of the innovation process. The Research, Development and Diffusion model assumes that solving problems is primarily a matter of attention, application, and money. A package of knowledge can be massed produced and widely disseminated. The producer controls the process and the type of innovation. The teacher is a passive and a rational consumer who will change if given enough correct information. Change is depicted as an orderly sequence which begins with the identification of a problem. The Research, Development and Diffusion model concentrates on the developer, but acknowledges a lack of institutional structures for designing and developing new ideas and materials.

The Problem-Solving (P-S) model is built around the user of the inservice program. This model assumes that the user has a definite need and that the inservice program will satisfy that need. Re-education of the teacher is of prime importance in this model. Teachers are conservative and do not want change, so change-agents are needed to overcome inertia, to prod, and to pressure people to be less complacent and to start working on serious problems. The P-S model is a psychotherapeutic model. The change-agent is a professional who attempts to influence change in the direction that he feels is most desirable. The Problem-Solving model concentrates on wide diffusion throughout an organization or an educational system, but acknowledges the lack of processes for implementing change once they are undertaken.

The theme of the Social-Interaction model is continuous self-renewal, where the potential adopter generally hears of the new practice and decides to use it or to ignore it after consultation with other people. This model stresses the importance of inter-personal networks of information, opinion leadership, personal contact, and social integration. Innovation is transmitted primarily through the social interaction of the group members. At each stage of innovation in this model, the potential adopter generally turns to different sources of information. The Social-Interaction model concentrates on the dynamics of the individual adopter but has few vehicles for dissmeination of innovation to a larger public.

Inservice is the vehicle of diffusion for innovation. Within the Western tradition diffusion is the third stage of scientific thought. Each inservice model has a different root metaphor which speaks from a different perspective . A definite role of the teacher is expected by each model. Each model is characterized by the different criteria for success and different views of the problem to be solved. But all models are common in some respect. All have the same

concepts of change, progress, and innovation. Change is inevitable, natural, and linear. Progress is continuous with no fixity or regression. The three inservice models belong, typically, to the Western educational tradition.

Altiek (1960) suggests that writer's metaphor tells the reader other things about him and his attitudes, as well as the attitudes he wishes the reader to have. We suggest that this also applies to a developer and/or a producer of any inservice program. The developer's values are displayed by the metaphors that underly the inservice model he chooses. Developers need to become aware of their own values and attitudes and to explain their position before attempting to solve any of the educational problems or inservice program problems. They need to define their own assumptions before they can help teachers identify and understand their own assumptions. Clarity can be accomplished if the developer becomes aware of the metaphor that he utilizes and if he critically analyzes this metaphor to ascertain if, in fact, it is representative of his values and attitudes.

Lauer (1973) claims that the target of change is either group focused, where the whole group will change as demonstrated by the Research, Development and Diffusion and the Problem-Solving models, or is ego-focused, where the individual changes as in the Social-Interaction model. When the individual is the target of change, it is assumed that an individual change will eventually produce change in the entire social order. Who will make the change can be classified into two groups: the participation of all those involved as in the Social-Interaction model or one group imposing change on others as demonstrated by the Research, Development and Diffusion and Problem-Solving models. Democratic change is not always the only way, the fastest way, nor the most efficient way.

There are three basic strategies of change. The rational-empirical strategy states that man is rational and will follow his self-interest when shown. The power coercive strategy states that man acts on the basis of power relationships -- legitimate or coercive. Third, the normative-re-educative strategy states that man is rational and will act on the basis of social norms as well as from knowledge of self-interest.

A basic theme of this writing has been the influence that metaphors have on us. The purpose of this article is not to criticize any one metaphor, nor any one inservice model. The purpose has been, rather, to make us more aware of the tremendous influence that metaphors have on inservice educational programs. We have pointed out that inservice programs are often not considered successful by the adopters. Time has also been spent discussing some of the various suggestions for successful inservice. There is no agreement by the various writers as to why programs are unsuccessful or how to make them successful. We believe that the main reason why there is not agreement is that the various writers hold different metaphors that form the basis of their work and personal experiences. These metaphors often conflict with the teachers who partake of the inservice. This belief also applies to the various developers of the inservice programs as well as the many adopters of the programs.

Writers, developers, producers and potential adopters of the programs should become aware of their metaphoric stance. In education we, often, are victimized by metaphors. We transfer the economic, military, industrial, technological, and political metaphors into education in the form of answers to our educational problem without examining their philosophies, reasons why they were developed, or end results. For example, we transferred the military's I-Q test into education with apparently no examination and analysis of why the military developed this particular test. We, in education, should not be concerned with testing

children to find out how fast they learn to become an extension of a machine. Yet we do. We have been the victims of the military metaphor.

Educators must learn to recognize the presence of metaphors, learn to use them instead of being used by them, and learn to develop new ones that may be more appropriate to education. If we are to avoid being used by metaphors and really attempt to solve education problems, it is important to become aware of the metaphor which shapes our preceptions of phenomena.

The ability to describe the dissimilarities as well as the similarities between the educational problems and the metaphors that we are viewing the problem for is significant. When we become aware of the metaphors in our educational problems, our diagnosis and prescriptions cease to appear obvious and we find ourselves involved, instead, in critical inquiry. Being aware of root metaphors becomes a tool for critical reflection when we attempt to solve educational problems through the vehicle of inservice programs.

The defining of problems and the perspective from which the problem is viewed matters. The way in which we state educational problems determines both the kinds of purposes and the values we seek to realize, and the direction in which we seek solutions. By being aware of the ways in which we state educational problems and by reflecting on the problem-solving processes which are usually tacit, we may consciously select and criticize the perspectives which shape our responses. We create new meaning when a metaphor is used and understood.

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